

## SUMMARY: MEDICAL HOME MODELS

**Definition:** Medical Home models provide accessible, continuous, coordinated and comprehensive patient-centered care, and are managed centrally by a primary care physician with the active involvement of non-physician practice staff<sup>1</sup>. Providers deemed a medical home receive supplemental payments to support operations expected of a medical home. Physician practices may be encouraged or required to improve practice infrastructure and meet certain qualifications in order to achieve eligibility.

**Intended Effects:** Medical Homes are intended to encourage a population-based, proactive and planned approach to care, whereby care is coordinated across various providers to facilitate the provision of recommended services, eliminate redundancies or unnecessary care, and engage patients.

**Incentives for Providers:** The physician receives supplementary payments (e.g., on a fee-for-service or per patient-per month basis) for coordinating patient care. The physician is required by terms of the agreement to provide this coordination and is encouraged to improve practice infrastructure in order to qualify as a medical home.

**Potential Problems:** A number of payers have implemented Medical Home programs, though standards for providers to qualify as Medical Homes vary across payers. In the absence of aligned incentives, resistance to collaboration between hospitals and specialists and Medical Homes may impede success of the model. Further, physicians serving as medical homes may have a limited ability to coordinate care in some settings.

**Evidence:** Evidence of the effects of enhanced coordinated care on patient outcomes indicates Medical Home models are promising tools by which to improve health outcomes and save money; however evidence of the effectiveness of Medical Homes in current operational forms is limited.

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<sup>1</sup> In discussing medical homes, the phrase “primary care providers” often includes consideration of non-physician staff such as registered nurses, nurse practitioners, medical assistants, and office administrators and practice managers.

# MEDICAL HOME MODEL

## 1. What is it?

The Medical Home model is designed to provide a single point of coordination for all health care, including specialists, hospital, and post-acute care. Practices that qualify as Medical Homes receive supplemental payments to compensate them for their services. The primary care physician acts as the facilitator and manager of the patient-centered care, and coordinates all levels of care, including care provided by other specialist physicians. The rationale for the model is that this coordination can reduce fragmentation in patient care in ways that lower costs and lead to better overall patient outcomes (Bailit and Hughes 2008; O'Malley, Peikes, and Ginsburg 2008; Rosenthal 2008).

Payment models are designed to encourage providers to agree to serve as medical homes for their patients and compensate them for the added services they provide. The payment models may include fee-for-service arrangements or a per-patient monthly payment for added care coordination services provided under Medical Homes. Some models provide additional payments to improve care by enhancing existing infrastructure (such as electronic medical records) and services. While some models involve patients choosing providers who are willing and able to serve as their “medical home,” existing programs often assign patients to a medical home based on existing delivery patterns. However, no standard implementation has been recognized, and individual payers are experimenting with a variety of payment mechanisms. Therefore, no single description captures all models.

Programs piloting the Medical Home Model often rely on the National Committee for Quality Assurance (NCQA) guidelines. These include: (1) improved access and communication, (2) use of data systems to enhance safety and reliability, (3) care management, (4) patient self-management support, (5) electronic prescribing, (6) test tracking, (7) referral tracking, (8) performance reporting and improvement, and (9) advanced electronic communications (NCQA, [http://www.ncqa.org/Portals/0/Programs/Recognition/RPtraining/PPCPCMH\\_Training.pdf](http://www.ncqa.org/Portals/0/Programs/Recognition/RPtraining/PPCPCMH_Training.pdf)). Medical Home Models currently being piloted may use any or all of these criteria, or they may create medical home tiering that requires only the higher ranked Medical Homes to meet all of the standards.

The model is endorsed by the American College of Physicians, the American Academy of Family Practitioners, the American Academy of Pediatrics and the American Osteopathic Association.

## 2. Intended effects

The goal of the model is to improve patient care and reduce costs. The model aims to provide more effective, equitable, and efficient health services to the population by encouraging the adoption of a population-based and planned approach to care. Medical home models are intended to encourage primary care providers to assume responsibility of all aspects of patient care. Proponents of medical homes believe care coordination facilitates the provision of recommended services, eliminates redundancies or unnecessary care, and encourages increased communication with patients as well as patient adherence to provider care regimens.

The idea is that coordinated care is more cost-effective and more beneficial to the patient than fee-for-service delivery models, which encourage independent care and greater healthcare consumption. The model intends to help physicians better understand patients' needs and eliminate unnecessary tests, hospital stays, and additional visits to specialists. The model is expected to be especially beneficial for children, adolescents, and persons with chronic conditions who require a constellation of services and sometimes require frequent monitoring. The intention is that existing primary care practices would be able to scale-up their services to achieve Medical Home

standards relatively easily. In addition, the model may encourage a greater number of medical students to choose a career as a primary practitioner.

### **3. Incentives for providers**

Providers who receive supplemental payments when they qualify as a medical home have a clear incentive to provide coordination services that meet the terms of their agreement with the payer. Some models include practice transformation stipends to encourage the practice to scale up infrastructure, expand hours, or establish electronic record keeping with the intention of improving effectiveness and efficiency. Providers remain responsible and at risk for delivering and managing appropriate care, whilst maintaining costs within supplemental payment amounts.

### **4. Potential problems or drawbacks**

Several potential barriers may impede success of the Medical Home Model. Despite availability of NCQA criteria, payers require varying qualifications for their medical homes and use different payment approaches,, which may create competing incentives for participating physicians and may limit the effects of multiple efforts in local markets. Physicians serving as medical homes may also have a limited ability to coordinate care in certain settings outside their scope of practice. Since payment approaches are typically targeted to primary care physicians, hospitals and specialists outside the Medical Home have few incentives to collaborate with the primary care physician (Fisher, 2008).

### **5. Experience with implementation**

A variety of healthcare payers and insurers have launched pilot Medical Home programs. The Massachusetts Coalition for Primary Care Reform established a framework for a Medical Homes model. Payment methods in the model include a risk-adjusted per-patient-per-month payment as well as a bonus payment that is dependent on the Medical Home achieving desired outcomes in quality, patient experience and cost-effectiveness (MACPR, 2008). CIGNA and Dartmouth-Hitchcock launched a Medical Home pilot program in New Hampshire in June 2008. The program covers patients on the CIGNA plan receiving care from Dartmouth-Hitchcock primary care physicians practicing in family medicine, internal medicine, and pediatrics. The pilot currently covers approximately 19,000 patients. An evaluation is intended for the program once it has been operational for 12 months (CIGNA, 2008).

Geisinger Health Care has piloted a Medical Home program in Pennsylvania. Some components of the Geisinger model include round-the-clock primary and specialty care access, a nurse care coordinator in each practice site, virtual care management support, and a personal care navigator (a person who responds to patients' inquiries) (Paulus, 2008). The focus is on proactive care in order to minimize hospitalizations and manage chronic diseases, and a referral network is linked with the primary care practice. In the Geisinger program electronic health records (EHR) help provide internet-based lab results, clinical reminders, self-scheduling, prescription refills and other capabilities. Geisinger implements practice-based payments for physicians, and monthly 'transformation stipends' to help strengthen and expand infrastructure. Monthly performance reports with quality and efficiency results are given to each medical home.

The Centers for Medicare & Medicaid Services (CMS) have initiated a Medical Home demonstration in order to improve quality of service, reduce costs and improve health care coordination for Medicare beneficiaries with qualifying chronic conditions.<sup>2</sup> CMS has defined a two-tier medical home model (Maxfield et al., 2008). In order

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<sup>2</sup> To access a list of qualifying chronic conditions

to qualify as a tier 1 Medical Home providers must have 17 basic capabilities including capabilities to track referrals and track tests and provider follow-ups. The tier 2 Medical Home must satisfy all tier 1 Medical Home qualifications as well as have electronic medical record keeping and coordination of care including follow-up of inpatient and outpatient care, and have three of nine optional capabilities. The demonstration is due to start service delivery in January 2010. CMS plans an evaluation of the pilot that will start when the demonstration begins, and will continue for one year after the demonstration ends. United HealthCare, Aetna, Blue Cross and Blue Shield Association are all developing medical home pilots.

## **6. Evidence**

Evidence exists to show improvement in health outcomes for patients in a primary care setting. Starfield & Shi (2002) document better health outcomes in early childhood and some disease-specific cases where patients were treated in a primary care setting. Evidence also exists suggesting core elements of Medical Homes based on the Chronic Care Model demonstrate potential to improve clinical outcomes and care processes for patients with chronic illness and reduce health care costs (Tsai et al. 2005; Bodenheimer, Wagner, and Grumbach 2002). However, because many medical homes are in early stages of development, there is limited evidence of the effectiveness of existing approaches.

## **7. Readings**

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## Making Medical Homes Work: Moving from Concept to Practice

Widespread concern about high and rising costs, coupled with increasing evidence that the quality of U.S. health care varies greatly, has put health care reform near the top of the domestic policy agenda. Policy makers face mounting pressure to reform provider payment systems to spur changes in how providers are organized and deliver care.

In many communities, physician practices, hospitals and other providers are poorly integrated in terms of culture, organization and financing. While these independent arrangements may offer some benefit, such as broadened patient choice, the flip side of independence is fragmentation—across care sites, providers and in clinical decision making for patients. Current payment systems, particularly fee-for-service arrangements, reinforce delivery systems that offer care in silos and reward greater volume but not quality of care. Fee-for-service payment also provides few incentives for providers to invest in improving care for chronic illnesses, which account for a far greater proportion of health care spending than do acute illnesses.

Among the many proposals for payment and delivery system reform under discussion, the medical home model has gained significant momentum in both the public and private sectors. The

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## Qualifying a Physician Practice as a Medical Home

By Ann S. O'Malley, Deborah Peikes and Paul B. Ginsburg

*Identifying an effective and efficient way to determine if a physician practice has the capabilities to serve as a medical home is a pressing challenge as public and private payers develop pilots to determine whether additional payment to medical homes can improve the quality and efficiency of care. Ensuring that a qualification tool validly captures the capabilities a practice needs to be a medical home can help practices focus on the most important activities to improve care. Most medical home initiatives rely on the joint principles of the patient-centered medical home developed by the primary care physician specialty societies, which lay out the general attributes of a patient-centered medical home. They emphasize four key primary care elements—accessibility, continuity, coordination and comprehensiveness—that research shows positively affect health outcomes, satisfaction and costs. An ideal qualification tool would ensure that medical homes are built on a firm foundation of these critical primary care pillars. A qualification tool that either gives insufficient emphasis to these bedrock primary care elements or gives too much emphasis to factors that may not be related to better performance risks excluding physician practices that truly function as medical homes and including those that don't. Moreover, overly burdensome documentation requirements for practice structures that ultimately may not improve patient outcomes run the risk of posing a barrier to practices seeking to participate as medical homes and distracting physicians from improving care for patients.*

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*Making Medical Homes Work*, continued from p. 1

concept has been promoted by primary care physician societies. And a broad range of insurers and payers—for example, United HealthCare, Aetna, the Blue Cross Blue Shield Association, and Medicaid programs—are developing medical home initiatives. Likewise, Congress has mandated a medical home demonstration in fee-for-service Medicare.

Although medical home definitions vary and continue to evolve, at the heart of a medical home is a physician practice committed to organizing and coordinating care based on patients' needs and priorities, communicating directly with patients and

their families, and integrating care across settings and practitioners. If enough physician practices become medical homes, a critical mass might be attained to transform the care delivery system to provide accessible, continuous, coordinated, patient-centered care to high-need populations—usually considered to be patients with chronic illnesses.

Some advocates ascribe a broader goal to the medical home model—to improve the quality of care, reduce the need for expensive medical services and generate savings for payers. Medical homes are expected to accomplish this goal by changing how physicians practice medicine.

Yet despite the enormous energy and resources invested in the medical home model to date, relatively little has been written about moving from theoretical concept to practical application, particularly on a large scale. What would an effective medical home program look like? And how should it be implemented? Forging ahead with medical home initiatives without such analyses to ground their design and identify potential pitfalls and solutions may result in ineffective programs that alienate patients and/or physicians. That would put at risk not only the resources invested by clinicians and payers/insurers in early initiatives, but also the political viability of the model itself in the long-term as a vehicle for wider health care reform.

The Center for Studying Health System Change (HSC) and Mathematica Policy Research (MPR) are uniquely positioned to address operational issues related to medical homes. Along with conducting independent and collaborative research relevant to medical homes, care coordination, payment policy and the organization of care delivery, HSC and MPR researchers have direct experience with both public- and private-sector medical home initiatives, including leading the design of the Medicare medical home demonstration.

Based on these experiences, we've identified four critical operational issues in the implementation of most medical home models that we believe have potential to make or break a successful program: (1) how to qualify physician practices as medical homes; (2) how to match patients to their medical homes; (3) how to engage patients and other providers to work with medical homes in care coordination; and (4) how to pay practices that serve as medical homes. Drawing on published data and our on-the-ground expertise, we hope that these analyses will guide clinicians, payers and policy makers as they attempt to build a solid foundation for successful medical home initiatives. Doing so will improve the chances that the medical home concept can serve as a stepping stone to broader reforms in health care payment and delivery systems. ■

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*Qualifying Physician Practices*, continued from p. 1

## Building Medical Homes on a Solid Primary Care Foundation

Public and private payers are launching patient-centered medical home (PCMH) experiments as one strategy to improve the quality and coordination of care, potentially lower costs, and increase financial support to primary care physicians. These experiments seek to test a medical home concept that emphasizes the central importance of primary care to an organized and patient-centered health care system.<sup>1-3</sup> The medical home concept posits that primary care physicians' direct and trusted relationship with patients, coupled with a depth and breadth of clinical training across body systems, position them to assess an individual's health needs and to tailor a comprehensive approach to care across conditions, care settings and providers.

Not all primary care practices are set up to function as a PCMH. In part, this shortcoming results from inadequate financial support for such activities as care coordination, along with inadequate training of providers on how to work together as a team. In an attempt to remedy this, payers are experimenting with providing additional payment to participating practices that can demonstrate the capabilities of a patient-centered medical home. Most current pilots and demonstrations require practices to "qualify" as a medical home via an objective measurement tool. The tool's measures, in effect, are a blueprint for practices' efforts to build medical-home capabilities.

## Primary Care and Chronic Care Models

While there are different views about what makes a physician practice a medical home, the specialty societies' joint principles are the widely accepted starting point for most current demonstrations and pilots.<sup>4</sup> The joint principles originate from two distinct conceptual frameworks, the primary care model<sup>1,2,5</sup> and the chronic care model,<sup>6</sup> each of which was developed for different purposes.

The primary care model<sup>1,2,5</sup> focuses on all patients in a practice and emphasizes whole-person care over time, rather than single-disease-oriented care. The primary care model identifies four elements as essential to the delivery of high-quality primary care: accessible first contact care, or serving as the entry point to the health care system for the majority of a person's problems; a continuous relationship with patients over time; comprehensive care that meets or arranges for most of a patient's health care needs; and coordination of care across a patient's conditions, providers and settings in consultation with the patient and family.<sup>1,2,5</sup>

The chronic care model focuses on "system changes intended to guide quality improvement and disease management activities" for

chronic illness.<sup>6</sup> The chronic care model includes six interrelated elements—patient self-management support, clinical information systems, delivery system redesign, decision support, health care organization and community resources. Three aspects of the model in particular—self-management support, delivery system design and decision support—used in combination have improved single chronic condition care, in particular for diabetes.<sup>6-8</sup> The designers of the chronic care model assumed that before implementation "every chronically ill person has a primary care team that organizes and coordinates their care."<sup>6</sup> In other words, the chronic care model is meant to be developed on a "solid platform of primary care."<sup>6,9,10</sup> Consequently, both the primary care and chronic care models suggest that a medical home qualification tool must first capture and measure the four defining primary care elements before emphasizing capabilities to treat individual chronic diseases.

Recognizing the benefits and evidence behind each of the key primary care elements—accessibility, continuity, coordination and comprehensiveness—on patient and population health outcomes, patient and provider satisfaction, and costs, the joint principles require the medical home to provide each.<sup>2,5,11-18</sup> To the four primary care elements, the physician societies added aspects of the chronic care model—team functioning in a physician-directed practice, quality and safety tools for evidence-based medicine, decision support, performance measurement, quality improvement, enlisting patient feedback and "appropriate" use of information technology.<sup>4</sup>

Common attributes across the primary care and chronic care models can inform selection of the most relevant measures for a patient-centered medical home qualification tool (see Table 1 for a summary of elements of the two care models as they align with the physician societies' joint principles). In sum, these conceptual frameworks and the evidence supporting them suggest that a tool to determine whether a practice is a medical home would ideally measure that a practice has in place processes to ensure that care is accessible, continuous, coordinated and comprehensive. Capabilities that could help support these elements include a searchable patient registry, a mutual agreement between the patient and the medical home team on their respective roles and expectations, tools for comprehensive care such as planned visits that include pre- and post-visit planning, the use of care plans when appropriate, and enhanced access via phone and same-day appointment availability. Lastly, because of the time and resource constraints under which primary care practices already operate, it is particularly important that the qualification tool not create an onerous documentation burden for participating practices.

**Table 1****Commonalities Between the Physician Societies' Joint Principles, the Primary Care Model and the Chronic Care Model that Can Guide Measurement of the Patient-Centered Medical Home (PCMH)**

PCMH Elements as Outlined by the Physician Societies' Joint Principles <sup>4</sup>	Capabilities related to this PCMH Element from the Joint Principles, the Primary Care Model & Chronic Care Model
<b>Accessibility of the practice</b> PCMH is an accessible point of entry into the health care system each time new care is needed (i.e. first contact care).	<ul style="list-style-type: none"> <li>• Open scheduling.<sup>4, 19-21</sup></li> <li>• Ease of making appointments and wait times.<sup>2</sup></li> <li>• Expanded hours.<sup>2, 4</sup></li> <li>• Options for patients to communicate with personal physician and office staff.<sup>4</sup></li> <li>• 24-7 phone coverage.<sup>2, 4</sup></li> </ul>
<b>Continuity of care</b> "Each patient has an ongoing relationship with a personal physician in the PCMH." Person-focused (not just disease specific) care over time.	<ul style="list-style-type: none"> <li>• Each patient has an identifiable primary care clinician for ongoing care.<sup>2, 4, 5, 13</sup></li> <li>• Patient is able to make appointments with that particular clinician.<sup>2, 5, 13</sup></li> <li>• Discussion about PCMH role and expectations with the patient—Discussion between personal physician and patient on the roles and expectations for the medical home, including making visible to the patient who the team members are.<sup>2, 21, 22</sup></li> <li>• Registry of patients.<sup>2, 4, 6</sup> PCMH has a list of patients for which it is responsible.</li> <li>• Complete medical records are retrievable and accessible.<sup>2</sup></li> </ul>
<b>Coordination of care</b> "across all domains of the health care system."	<ul style="list-style-type: none"> <li>• PCMH coordinates care that patients receive from other providers (e.g. specialists, hospitals, home health agencies to assure that patients get the indicated care when and where they need and want it, including medication review and management.<sup>2, 5, 14, 23</sup></li> <li>• Referral tracking and follow up.<sup>2</sup></li> <li>• Evidence-based decision making around referrals.<sup>5, 24</sup></li> </ul>
<b>Comprehensiveness</b> PCMH recognizes and provides, or arranges for "care for all stages of life, including: acute care, chronic care, preventive services and end-of-life care."	<ul style="list-style-type: none"> <li>• Planned visits.<sup>6, 25, 26</sup></li> <li>• Registry of patients<sup>2, 4, 6</sup> facilitates comprehensive care and population health management by enabling searches of patients with particular conditions and characteristics.<sup>2, 6</sup></li> <li>• Range of services offered by PCMH.<sup>2, 5</sup></li> </ul>
<b>Physician directed medical practice</b> with a team that "takes collective responsibility for ongoing care of patients."	<ul style="list-style-type: none"> <li>• A team approach can, in theory, leverage the relative clinical and organizational training skills of each member (e.g. physician, nurse, medical assistant) to ensure that the increasingly complex and inter-related needs of patients with multiple chronic conditions are met. Teamwork can facilitate comprehensiveness and coordination of care.<sup>2, 6, 27</sup></li> </ul>
<b>Quality &amp; Safety</b>	<ul style="list-style-type: none"> <li>• Decision making guided by evidence-based medicine and decision-support tools.<sup>6</sup></li> <li>• Quality improvement efforts.<sup>4, 6</sup></li> <li>• Patients participate in decision making.<sup>4, 6</sup></li> <li>• Patient feedback is sought to ensure expectations are met.<sup>4, 6</sup></li> </ul>
<b>Information Technology</b> "Uses IT appropriately to support optimal patient care, performance measurement, patient education and enhanced communication."	<ul style="list-style-type: none"> <li>• Registry of patients.<sup>2, 4, 6</sup> Consensus statement focused on aspects of information systems most relevant to the immediate progress of the PCMH emphasizes the use of a registry to identify the PCMH's patients, facilitate disease management, population health and evidence-based care.<sup>28</sup></li> </ul>

## Current Qualification Tool

Most medical home demonstrations and pilots are measuring whether a practice is a medical home via the National Committee for Quality Assurance (NCQA) Physician Practice Connections-Patient Centered Medical Home tool (PPC-PCMH version 2008).<sup>29</sup> The PPC-PCMH is a modification of an earlier NCQA tool, the PPC (Physician Practice Connections) that focused on recognizing practices that use systematic processes and information technology to enhance the quality of care.<sup>29</sup> The PPC and the PPC-PCMH are based on the chronic care model<sup>6</sup> and have less emphasis on the primary care model's four elements. While it is difficult to succinctly describe the PPC-PCMH or its scoring algorithm, the tool has nine standards:

- Access and Communication;
- Patient Tracking and Registry Functions;
- Care Management;
- Patient Self-Management Support;
- Electronic Prescribing;
- Test Tracking;
- Referral Tracking;
- Performance Reporting and Improvement; and
- Advanced Electronic Communication.

Embedded within the tool's nine standards are 30 elements containing a total of 166 items, or measures (see Table 2 for a summary of the measures and the capabilities captured). Depending on the score achieved, the PPC-PCMH can qualify a practice at one of three levels of medical-home capabilities (basic, intermediate, advanced). So, for example, at Level 1, a practice must pass five of 10 "must-pass" elements. Practices seeking PPC-PCMH recognition complete the Web-based tool and provide documentation to validate responses.<sup>29</sup>

## How the Tool Performs in Measuring Medical-Home Capabilities

The PPC-PCMH tool has notable strengths, first of which is its support from payers, specialty societies and the National Quality Forum. The tool allows for flexibility in how practices meet some of the requirements. This is important because procedures for achieving particular capabilities will likely vary with practice culture, resources and patient-panel characteristics. In addition, the NCQA tool requires supporting documentation from practices for those capabilities where validation appears to be necessary to ensure their presence.<sup>2,30</sup> NCQA's experience and infrastructure for

fielding and scoring quality measures also are strengths. Thus, the tool is a good start for developing consistent measurement across medical home initiatives.

However, the current PPC-PCMH may not be ideal for ascertaining medical-home capabilities because it underemphasizes some of the defining primary care elements and overemphasizes issues not specific to a medical home. The tool has a fairly strong emphasis on access and some aspects of coordination, such as referral tracking, but other important aspects of coordination (e.g. between the primary care physician and specialists) are not part of the 2008 version that most pilots plan to use. The tool has only two items on continuity of care and few items on comprehensiveness.

Many of the measures in the PPC-PCMH focus not on primary care, but on such issues as information technology or condition-specific performance reporting. So a practice could potentially score well on the PPC-PCMH without providing patient-centered primary care.

First, the tool places great weight on information technology (IT) capabilities—77 of the 166 measures relate to IT. Information technology clearly has potential to make clinical data available to providers in real time, when it is needed for shared decision making with patients. When an affordable, interoperable electronic medical record (EMR) eventually becomes a reality, it will likely be an enormous advance in information continuity across care settings and, thus, potentially foster care coordination.

In the meantime, however, it may be premature to require practices to have more than a searchable patient registry. Many primary care physicians, particularly those in small practices that make up the bulk of the U.S. primary care infrastructure,<sup>31</sup> lack the economies of scale that facilitate purchasing and maintaining an EMR and do not want to do so until an affordable and interoperable option is widely available. Moreover, the evidence of commercial EMRs' effectiveness in primary care practices is mixed. To date, the vast majority of effectiveness studies come from four large institutions with internally developed EMRs.<sup>32,33</sup> Most of the positive outcomes from outpatient studies involve the use of computer-generated, paper-based reminders or registries.<sup>32-34</sup> The presence of an EMR correlates only weakly with clinical quality of care measures. Nevertheless, practices with fully functional EMRs scored the highest on the PPC.<sup>35</sup>

Two other IT capabilities that are heavily emphasized in the PPC-PCMH, but for which the evidence is mixed, include e-mail communication with patients<sup>36,37</sup> and e-prescribing.<sup>32,33,38,39</sup> Research on e-mail's effectiveness in patient care is still in its infancy. As of 2006, only 3 percent of physicians used e-mail frequently to communicate with patients.<sup>37</sup> While there is momentum in federal policy behind e-prescribing, improved outcomes from e-prescrib-

**Table 2**  
**Frequency of Items from the PPC-PCMH Organized by Concept Captured**

Percentage*	Number of Items	Capability**
46	77	Information Technology <ul style="list-style-type: none"> <li>• 19 items on e-prescribing</li> <li>• 18 items on electronic data system for patient demographic data</li> <li>• 14 items on the use of e-mail, e-communication, or interactive Web site</li> <li>• 11 items on electronic system for basic clinical data</li> <li>• 8 items on electronic system for managing tests</li> <li>• 7 items on electronic system for population management</li> </ul>
14	24	Care for three specific conditions that the practice identifies as important to their patient panel, e.g. including identifying those patients, use of condition-specific guidelines, care management and self-management support.
13	21	Coordination of care <ul style="list-style-type: none"> <li>• 1 item on scheduling visits to different providers into one trip for the patient</li> <li>• 4 items on referral-tracking</li> <li>• 6 items on test tracking and follow up</li> <li>• 10 items assess information continuity across settings, e.g. care transitions</li> </ul>
9	15	Accessibility
5	8	Performance reporting
4	7	Organizing clinical data via tools such as problem lists and medication lists
2	4	Use of non-physician staff (an important element of team work)
2	4	Does the practice collect data on patient experience with care <ul style="list-style-type: none"> <li>• 1 item on access to care</li> <li>• 1 item on physician communication</li> <li>• 1 item on patient confidence in self-care</li> <li>• 1 item on satisfaction with care</li> </ul>
1	2	Preventive services
1	2	Continuity of care with a personal clinician
1	2	Patient communication preferences

\* Percentage of the total of 166 items.

\*\* These item counts have been organized by content area rather than by their labels in the PPC-PCMH.

ing have predominantly been demonstrated with computerized physician order entry (CPOE) in the hospital setting. In the primary care setting, results have been more mixed.<sup>32, 33, 38-40</sup> The PPC-PCMH's heavy IT emphasis raises the concern that practices with IT structures may score well without necessarily providing better clinical outcomes or continuous and coordinated care. The large number of IT measures in the NCQA tool could also create barriers to qualification among practices that provide good primary

care but don't necessarily emphasize IT.

Second, the tool requires extensive documentation around single-condition care. The goal of this requirement was to provide practices with the motivation to consider how a systematic approach to work flow and documentation could promote broader changes within a practice. This incremental approach could help practices to systematically address particular chronic conditions and important population-based health issues. The tool allows

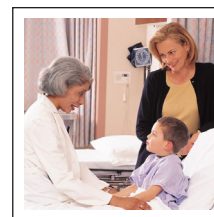
practices the flexibility to identify what those important conditions are for its patient panel. A caution, however, is that among Americans 65 and older, almost two-thirds have multiple chronic conditions.<sup>41,42</sup> Given this, there is a risk that a measurement approach that overemphasizes adherence to condition-specific guidelines could create incentives to simply treat a patient's individual condition to achieve benchmarks rather than to provide comprehensive and coordinated care across a patient's complex health needs.<sup>43</sup>

Illustrating these risks, a high score on the current PPC-PCMH tool does not guarantee that a practice actually functions as a medical home. One study in predominantly large groups in Minnesota found that particular components (e.g. decision support, clinical information system) of the PPC, a forerunner to the PPC-PCMH were correlated with performance in diabetes care (HbA1c  $\leq 8\%$ , LDL  $< 130$  mg/dL).<sup>44</sup> At the same time, performance on the tool does not appear to correlate with patient experiences with care.<sup>35</sup> Thus, while the tool has promise in terms of capturing important elements of diabetes care, a medical home qualification tool should better identify whether patients are experiencing care that is truly patient-centered.

The time required to qualify via the PPC-PCMH tool, both in terms of developing processes to meet the tool's measures and completion of the application itself, may be a barrier to participation among smaller practices that have fewer resources. After completing a shorter online screening tool that provides practices with an opportunity to estimate where they might fall in relation to the tool's criteria, the practice can decide whether to move forward with the actual PPC-PCMH. Only anecdotal information is available to date on the 2008 version of the PPC-PCMH. Based on information from the older version, NCQA estimates that the newer PPC-PCMH tool and its documentation take a practice on average between 40 and 80 hours to complete. This does not include time a practice spends developing new processes to address certain capabilities measured by the tool. Several practices report that the older PPC (2004-05) application was time-consuming, taking 80 to 100 hours to complete.<sup>45</sup> Given that practices with five or fewer physicians constitute 95 percent of office-based medical practices,<sup>31</sup> such time and resource considerations could pose significant barriers to participation among the very practices medical home initiatives are targeting.

## Next Steps

One approach to modifying the PPC-PCMH tool would be to focus initially on measures that capture the key primary care elements, are supported by evidence, and that experience suggests are feasible or have the strongest face validity with practitioners and



If certain measures require a good deal of time and documentation from a practice, then there should be strong evidence that they lead to improved patient outcomes.

patients. If certain measures require a good deal of time and documentation from a practice, then there should be strong evidence that they lead to improved patient outcomes.

The burden on practices to complete the PPC-PCMH documentation could be reduced by decreasing the number of IT items, particularly those with inconclusive data on effectiveness. Practices that have an EMR should get credit for their efforts, but this can be ascertained with fewer IT measures. Existing data do support keeping a measure of whether a practice has an electronic patient registry, including a list of patients for whom a practice serves as a medical home and that can be used to identify patients needing preventive services and chronic condition management.<sup>2, 6, 28</sup>

At this point, the PPC-PCMH might be viewed as a starting point for developing a future tool that more comprehensively captures the four primary care elements. Validated measures for these primary care elements exist,<sup>46, 47</sup> and selected domains from validated provider surveys could be incorporated into the PPC-PCMH.<sup>46</sup> For example, in addition to the tool's two current measures of continuity of care—scheduling each patient with a personal clinician and visits with the assigned personal clinician—validated items on continuity could be added, such as how long on average patients stay with the practice and what percentage of patients use the practice for most of their non-emergency sick and well care needs.

The tool could include measures on processes to improve communication between the medical home and specialists related to referrals and consultations. With respect to comprehensiveness, a practice could check off services provided, ranging from preventive, acute and chronic care to basic procedures that can be done in the office setting with a focus on those known to be cost-effective and of sufficient need in the population, such as immunizations,

family planning and pulmonary function tests.<sup>2</sup>

Validation that the medical home is indeed patient-centered could be enhanced by the inclusion of patient feedback in a qualification tool. While most demonstrations and pilots will delay enlisting patient feedback until the evaluation phase (rather than doing so in the qualification phase), confirmation of the presence of particular PCMH elements during the qualification phase could be assisted by incorporating patient input using validated measures.<sup>46, 47</sup>

Recognizing many of these concerns, the physician specialty societies endorsed the PPC-PCMH for testing purposes only. NCQA is working to incorporate stakeholder input into future versions of the tool, including measures of coordination between the primary care physician and specialists and an important measure on mutual acknowledgement of the partnership between the patient and the medical home. Unfortunately, these revisions are not likely to be incorporated in time for the tool that will be used in the qualification phase of most pilots. The reality of current medical home initiatives is that payers want to see documentation of improved capabilities from providers if they are going to increase reimbursement for medical home services. In an effort to be responsive to that request, the medical home qualification tool train has, perhaps, prematurely left the station.

Past experience with performance measurement linked to payment suggests that “we will get what we measure.” Both the primary care and chronic care models suggest that the qualification of practices as medical homes should be based on the conceptual underpinnings of primary care. Measures in a medical home qualification tool, therefore, should capture the structures and processes that ensure accessibility, continuity, coordination and comprehensiveness. Additional capabilities that could help deliver these elements and enhance chronic care provision include a patient registry, mutual acknowledgement between the patient and the medical home physician on their respective roles and expectations, 24-7 phone access, some same-day appointments, team-based care, and the use of planned care visits.

At this critical turning point for the nation's fragile and underfunded primary care infrastructure, a medical home qualification tool that insufficiently emphasizes key primary care elements risks excluding physician practices that actually deliver patient-centered primary care as medical homes and including those that don't. Moreover, an overly burdensome tool with large documentation requirements for structures that ultimately may not be associated with improved clinical outcomes runs the risk of distracting physicians from developing the practice capabilities that can truly improve patient care. ■

## Matching Patients to Medical Homes: Ensuring Patient and Physician Choice

By Deborah Peikes, Hoangmai H. Pham, Ann S. O'Malley and Myles Maxfield

*For medical homes to achieve their potential to improve care, payers must link each eligible patient to a medical home practice in a way that ensures transparency, clinical face validity and fairness for physicians. Equally important are adequate choice and awareness of the medical home model for patients and operational feasibility for payers that must determine which physician practices are eligible for enhanced payments. The approach the payer uses to assign, or attribute, patients to medical homes will ultimately influence how successfully medical home initiatives can engage patients and physicians.*

### Why Patient Assignment Matters, Or It Takes Three to Tango

**P**hysician practices acting as medical homes need to know which patients they are responsible for so the practices can coordinate those patients' care. If physicians can clearly identify the patients they are responsible for, they can more accurately predict the additional revenue they can expect for acting as a medical home. More accurate revenue prediction in turn allows practices to make informed decisions about whether they want to become a medical home and what additional staff or infrastructure, such as information technology, they can afford to purchase. Finally, giving physicians some choice about which patients they will form medical home relationships with rather than having this dictated by a payer will enhance physician buy in.

**Patients** need to know which practice serves as their medical home so they know who to count on to coordinate and manage their overall care. In addition, patients need to be aware of what the medical home will provide if they are to work closely with the medical home and change the way they use care. To be sure, a patient can garner some benefit from practice transformations resulting from their physician's practice becoming a medical home—such as ensuring that abnormal lab results are tracked—without knowing about the medical home model. Ideally, however, the medical home will help patients decide when to see a specialist, select a specialist that will both serve the patient's clinical needs and coordinate with the medical home physician, and achieve smooth transitions after a hospital discharge.

The current fee-for-service payment system lacks incentives for primary care physicians to consistently play an active role in

integrating and coordinating care. Without a conversation explaining the new medical home model of care, many patients will continue to use care outside of the medical home without telling their medical home physician. If physicians are unaware of patients' self-referrals to specialists, or emergency room and hospital use, they cannot help patients coordinate their care. Similarly, if medical homes provide expanded access, this should also be explained to patients so they do not simply use the emergency room or seek out another primary care physician for problems that can be addressed in the medical home practice.

Evidence suggests that educating patients about the roles and responsibilities of both the medical home physician and the patient can help patients transform the way they use care. Indeed, the British Columbia Primary Care Demonstration found that patients' use of specialty, emergency room and primary care delivered by other physicians declined only after the program changed the registration process to require that physicians educate patients about the benefits of continuity of care with the primary care physician, as well as providing extended hours.

The final reason patients should be informed of the medical home is to address potential privacy concerns. If patients are not informed, they may be alarmed to find out that payers are sharing confidential information with the medical home physician about their use of emergency room, hospital and specialist care.

*Payers*, typically insurers, need to link patients to specific physicians for three reasons. First, since most insurers in part use capitated payments, or per-patient, per-month fees, to compensate physicians for providing medical home services, insurers need to know which patients belong to which physicians so that payment goes to the correct physicians. Second, some insurers provide feedback data on quality and utilization for individual patients or the entire patient panel to physicians as part of their medical home initiatives. Finally, insurers need to know which patients belong with which physicians when they evaluate the effectiveness of the medical home.

Payers can link patients to physicians using four general approaches:

- apply claims-based algorithms;
- ask physicians to identify patients;
- ask patients to identify physicians; or
- employ hybrids of these three approaches.

Each of the approaches has different strengths and weaknesses on six important dimensions: patient choice, physician choice, ease



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for physician, ease for insurer, correct assignments and encouraging patient understanding of medical home rights and responsibilities (see Table 3).

### Claims-Only Approach Common but Prone to Errors

The most commonly used approach to linking patients to physicians in commercial insurers' medical home pilots relies on claims-based algorithms. Such algorithms typically search historical claims for the physician billing for the most recent claims with an evaluation and management (E&M) code or pharmacy claim, or the largest share of E&M visits for the patient.<sup>48</sup> Claims-based approaches are expeditious because the insurer avoids the costs of collecting information from patients and physicians.

An approach that relies exclusively on claims is operationally easy for both insurers, who simply review historical claims data, and physicians, who do not participate in any way. However, by excluding physician and patient input, this approach does not allow either to select the person with whom they perceive they have a medical home relationship. Moreover, automatic assignment may interfere with existing patient-physician relationships and risk alienating both parties. Even if claims could get the assignment correct, the success of the medical home intervention depends on educating patients about the new services medical

**Table 3**  
**Trade-Offs of Different Medical Home Assignment Procedures**

	Claims-Based Algorithms	Physician Reports	Patient Reports	Hybrid (Claims, Physicians, Patients)
Ensures Patient Choice	No	No	Yes	Yes
Ensures Physician Choice	No	Yes	No	Yes
Operationally Easy for Physician	Yes	No	Yes	No
Operationally Easy for Payer	Yes	No	No	No
Correct Assignments	Not Always	Not Always	Not Always	Yes
Encourages Patient Understanding of Medical Home Rights and Responsibilities	No	No	Yes	Yes

homes are providing and how to use care in a way that facilitates efficiency and coordination. Without involving patients, this opportunity is lost.

Perhaps most importantly, while the efficiency of using historical claims data is tempting from an operational perspective, claims can be inaccurate and may not reflect clinical realities. Because many patients see multiple physicians, claims algorithms cannot always identify the correct provider. For example, in a given year, Medicare beneficiaries see a median of two primary care providers and five specialists working in four different practices.<sup>49</sup> The Medicare Health Support (MHS) study examined how often a group of physicians identified via a claims algorithm actually included the patient's self-reported primary physician for heart disease. While the algorithm identified on average five doctors per beneficiary that might be the personal physician, it failed to include the primary physician as identified by 17 percent of patients.<sup>50</sup>

Another illustration of the inaccuracy of claims-based algorithms comes from the seeming instability of care relationships suggested by claims data, which may not be consistent with patient self-reports. The Medicare Current Beneficiary Survey indicates that patients' care relationships are more stable than the claims-based algorithm would suggest, as 70 percent of beneficiaries reported having the same physician as their usual provider for at least three years; the analogous figure would be less than 40 percent based on claims assignment.<sup>49</sup>

Anecdotal evidence suggests patients with other types of insurance also see multiple primary care practices. For example, one state Medicaid program found that half of all patients whose claims suggested they saw a large primary care practice as their medical home—they had one or more well-child visits or two or more sick

visits with the practice in the prior year—also had visits with other nearby practices. United Healthcare's analysis of claims data convinced the company to supplement claims information with patient and physician input. The analysis used the prior 18 months of claims to identify the likely medical home practice of commercially insured patients aged 18 to 64. A year later, claims data suggested that 72 percent of the patients with a medical home the year before who still had coverage with United had the same medical home practice, 16 percent had moved to another practice, and 12 percent did not use a primary care practice.<sup>51</sup> Claims data alone cannot answer whether these patients truly changed the practice they consider to be their medical home.

Another problem with most current claims-based approaches is that they do not address patients who lack a primary care physician, or the "medically homeless." One study found that in a one-year period, 15 percent of all Medicare beneficiaries saw only specialists without seeing any primary care doctors, and 6 percent had no E&M visits with any type of doctor.<sup>49</sup> Another study reported that more than one-third of working-age adults did not have an accessible primary care provider, and half of children did not have a medical home.<sup>52</sup> Approaches based purely on claims would not be able to assign these patients.

### Physicians May Be Unaware of Other Providers

An approach that asks physicians to identify which patients to assign to their practice still requires insurers to reconcile each physician's patient list to ensure the patients are eligible for coverage and have not been identified by another physician. While physicians would have input into which patients they would like to serve, in many cases, they may not be aware of other physicians that their patients see.

Thus, an approach that relies on physician input without patient input may not always generate correct assignments. And like claims-only approaches, physician-driven approaches would not assist patients in receiving adequate information about the new medical home services.

## Patient Reports Operationally Challenging

Turning to a patient-focused approach, where patients would be asked to submit the name of their medical home, the burden on insurers to collect this information from patients would be high. People don't always turn in their forms. For example, often only one-third to one-half of people respond to social science surveys without substantial effort to collect their responses. Even when money is at stake, not all people file the necessary forms. Only 80 percent to 86 percent of tax filers eligible for the earned income tax credit actually claim the credit.<sup>53</sup>

The patient-based approach has three strengths. First, there is no operational burden on physicians. Second, the assignments will be correct from the patient perspective. Third, because insurers will need to inform patients about the medical home concept when their input is solicited, insurers likely would inform patients of their medical home rights and responsibilities. However, the physician's perception of who their core patients are may vary from the patient's perspective.

## A Hybrid Approach Can Help Build Medical Home Relationships

A hybrid approach that combines features of the claims-based, physician-driven and patient-driven approaches would best help build medical home relationships while honoring existing patient-physician relationships. For example, insurers could send practices a list of their potential patients (e.g., those who claims indicate they saw the physician one or more times in the prior two years). The physicians would then be expected to obtain the patient's consent to be matched to their practice, and the physician could explain medical home features to the patients. This approach also ensures that patients can decline if they prefer another medical home.

Insurers could send patients who had not seen a physician in the prior two years a list of medical homes in their area that are accepting new patients and ask patients to select one, or opt in. While insurers might not wish to simply assign patients to a practice and give them the opportunity to change that assignment—an opt-out approach—there may be a role for such an approach for patients who do not voluntarily select a medical home. The insurer could assign those patients to a practice and notify both the practice and patient of the assignment and the patient's ability to



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change to another medical home if desired. Seeking patient input, and only assigning patients if they do not provide it, decreases the burden for the insurer, while still maximizing patient and physician choice.

The insurer could also require a formal, bilateral acknowledgment between the medical home physician and the patient that explains the respective roles of the medical home and the patient. Patients would retain the right to change their medical home if they are not satisfied with their care.

## Accurate Assignment Matters

Accurate and meaningful linkages between the patient and the medical home physician are critical and require the input of physicians and patients. Having a process in place that requires patients to participate actively is pivotal to the potential of medical homes to transform patterns of care.

An approach that balances the needs and preferences of patients, physician practices and payers carries four benefits. First, such an approach helps obtain patient buy in to understand and use new medical home services effectively. Second, physicians will have clear responsibility for individual patients and be better able to coordinate care for those patients. Third, insurers can direct payment and provide information on service use and prevention or treatment needs to each physician for the appropriate patients. Finally, the most accurate approaches to assignment will facilitate rigorous evaluations of the medical home model. ■

## Medical Homes: The Information Exchange Challenge

By Myles Maxfield, Hoangmai H. Pham  
and Deborah Peikes

*The potential of medical homes to improve quality and reduce costs by improving coordination of care across providers, care settings and clinical conditions will be limited without effective mechanisms for exchanging clinical information with patients and providers outside of the medical home. An explicit agreement between the medical home and the patient detailing the roles and responsibilities of both could assist with the exchange of information. Exchanging information with specialists may not be feasible without some form of electronic exchange or incentives for specialists to participate.*

### Closing the Circuit Among Medical Homes, Patients and Other Providers

Medical home initiatives typically have two overarching goals—to reduce costs and improve the quality of care. Medical homes are expected to reduce costs directly by avoiding redundant or unneeded tests, imaging, procedures and medications, hereafter generically called unnecessary services. These reductions are expected to be large enough to offset any increased spending on medical home services. By maintaining comprehensive clinical information on patients, medical homes can avoid unnecessary services in three ways: 1) using the results of tests, imaging and services ordered by other providers; 2) advising patients who seek care from another provider whether that care is needed; and 3) increasing the delivery of primary and secondary preventive care.

The second overarching goal of medical home programs is improving the quality of care by maintaining comprehensive clinical information on the care patients receive from other providers, providing a sounder basis for the medical home physician's diagnoses and treatment decisions. In addition, use of evidence-based guidelines and registries can help medical homes ensure patients receive recommended care. Improved quality of care also may reduce health care costs by avoiding preventable hospitalizations, complications, medical errors and unnecessarily long episodes of care.

Coordinating care across providers is one critical way to reduce overuse of services. The medical home ideally will help patients use appropriate specialists and coordinate the testing and treatment that all providers deliver. But whether medical homes can achieve this goal depends on the behavior of patients and other provid-

ers—behavior that medical homes cannot completely control. Medical home physicians rely on patients to report plans to see other providers, including specialists. Without such knowledge, medical home physicians cannot make appropriate decisions to instead provide the care themselves, steer the patient to a high-quality specialist or determine if another type of specialist would be more appropriate.

Unfortunately, there is a risk that patients may not share this information with the medical home. Fee-for-service payment systems provide few incentives, penalties or restrictions on patients' use of other providers, and some patients may view efforts to coordinate with the medical home physician as restrictive and time-consuming.

Specialists must in turn share information about their clinical findings, prescribed medications and care plan with the medical home, either directly or through the patient, so the medical home can ensure that the patient's overall care is consistent and integrated. But under neither fee-for-service nor current medical home models do specialists receive additional compensation or other incentives for communicating with the medical home or patients. While some might argue that existing standards of care and payment rates already include expectations for such communication, the reality is that it often does not occur.

### Medical Home Information Exchange

Effective information exchange between the medical home and the patient relies on an agreement between the medical home and the patient. Under such an agreement, patients agree to tell the medical home when they wish to see another primary care physician or specialist and why. In return, the medical home agrees to oversee the entirety of patients' care, including advising patients whether or not to seek care from another practitioner. If patients are unwilling to share complete information on the care they receive, or wish to receive, from other providers, the medical home will not be able to comprehensively manage patient care. Such a breakdown in the exchange of information between the medical home and patient would leave the patient's care as fragmented and inefficient as under current fee-for-service arrangements.

The exchange of clinical information between the medical home and patients' other providers—specialists, other primary care physicians, hospitals, post-acute care facilities, nursing homes—is equally essential to the medical home model.

### Patient Challenges

There are two major challenges to exchanging clinical information between the medical home and patients. The first is that many patients in fee-for-service systems may not want to put all

their information eggs in one medical home basket. Specifically, many patients, and especially many Medicare beneficiaries with chronic conditions, see many practitioners, including multiple primary care physicians. Some patients believe that doing so offers the advantages of multiple perspectives on the best treatment approach. These patients may not want to place all their trust in the hands of a single medical home provider in the belief that “two physician heads are better than one.”

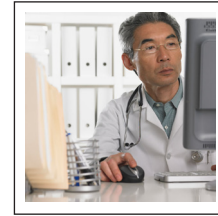
The second major challenge is that some patients may fear their medical homes will function as a gatekeeper to control access to other providers. While the medical home model tries to avoid the mandatory gatekeeper model used by some managed care organizations, medical homes are likely to have a “soft gatekeeper” function. One of the most important mechanisms for medical homes to achieve cost savings is for the medical home to identify potentially redundant tests and services before they occur and counsel patients to avoid redundant services. While some patients may dislike this oversight, others may simply not take the time to circle back and inform their medical home about care they plan to receive, or have received, elsewhere.

### Specialist Challenges

As challenging as the medical home-patient exchange of information is, the medical home-specialist exchange may be more so. The primary challenge in exchanging information with other providers is that the number of other providers can be large. One study found that the typical primary care physician shares his or her Medicare patients with 229 other physicians working in 117 other practices.<sup>54</sup>

In most communities, different physician practices operate autonomously of one another, with little integration in terms of common culture, administrative procedures, financing or information systems. Many medical homes may find it practically infeasible to negotiate “service agreements” with all providers seeing their patients to lay out common expectations about how each party will share clinical information. Even if service agreements were negotiated with all other providers, many medical homes would find it infeasible to exchange information with all providers seeing all of the medical home’s patients. Without some form of electronic information exchange among providers beyond fax machines, implementing information flows among networks of this magnitude may not be practical for many practices.

Second, medical homes cannot establish service agreements with every other provider because some of those encounters, such as those in emergency departments or during hospital admissions, cannot be easily anticipated. Thus, a related issue for coordinating care with outside providers is how to improve information flow so that medical homes know when their patients use emergency



Medical home initiatives typically have two overarching goals—to reduce costs and improve the quality of care. Medical homes are expected to reduce costs directly by avoiding redundant or unneeded tests, imaging, procedures and medications.

departments or are hospitalized. With more complete information on incidental care encounters, medical homes would be better able to educate patients about potential alternatives for care, provide relevant clinical history to emergency and inpatient providers, assist in communicating with patients’ families, and help patients understand hospital discharge instructions and coordinate transitional care.

Third, many specialists may not see the value of entering into service agreements with medical homes. Specifically, payers typically pay a fee to the medical home that includes the time and equipment devoted to the information exchange, but specialists are not paid directly. If the specialist is practicing in a geographic area containing many medical homes, the costs of exchanging information on many patients with many medical homes may be substantial. In theory, the medical home could compensate specialists for the time and equipment used in the information exchange by sharing medical home fees with specialists. Such an arrangement may require modification to law and regulation pertaining to provider fee-splitting. In practice, many sponsors of medical home initiatives do not include the full cost of exchanging information with other providers in medical home fees. In such instances, the medical home is unlikely to share fees with specialists.

### Overcoming the Challenges

Several approaches can mitigate the challenges of the medical home-patient information exchange. The first is to make the agreement between the medical home and the patient as explicit and formal as possible. This means the agreement should be written, and the medical home should discuss the agreement with the



The medical home model can serve as an impetus for increasing primary care physicians' responsibility and authority to coordinate the care of their patients, as well as foster greater patient self-management of medical conditions.

patient, ideally in person. The agreement should describe the responsibilities of, and benefits to, the patient and the medical home. Patients agree to share information on all aspects of their care with the medical home provider and to consider the medical home physician's advice seriously, even when it pertains to care provided by a different physician. In return, the medical home offers the patient better coordinated care and a more satisfactory patient experience. Both parties should sign the agreement.

A second approach is for the medical home program to exclude patients who are unwilling to enter into such an agreement. The medical home should attempt to persuade the patient to join the medical home program, but failing that, the medical home and program sponsors should recognize that the medical home model may not be well suited to all patients.

Turning to the medical home-specialist information exchange, the less expensive it is to exchange a particular type of information, the more feasible it will be for medical homes to exchange information with large numbers of specialists. One way to minimize the cost of information exchange is for medical home programs to focus on practices that already participate in a network of providers, such as an integrated service delivery network (ISDN), health information exchange (HIE) or regional health information organization (RHIO). For example, such networks can include information exchanges with local hospitals through electronic physician portals<sup>55</sup> that can push information to the medical home practice when a patient is evaluated at a hospital. Such an approach was used successfully with several disease

management providers in recent Medicare demonstrations. Such networks minimize the cost of setting information exchange agreements with specialists, as well as minimize the transaction cost of exchanging clinical information.

A second approach specific to ambulatory care physicians is for payers to require specialists to enter into service agreements with medical homes as a condition of inclusion in their plan network. Third, payers could leverage other financial incentives they may already be offering providers to use electronic information systems. For example, Medicare could combine the financial incentives in its electronic health record (EHR) demonstration with the Medicare medical home demonstration. The combined incentive may encourage more practices to invest in EHR technology, which would in turn reduce the transaction cost of the information exchange. For this strategy to be effective, payers would have to require interoperable EHR systems.

Fourth, payers could use claims data to provide feedback to the medical home on the patient's health care from other providers. Information on hospital admissions, emergency room use and the need for preventive services would be particularly useful. Clearly this strategy raises privacy concerns, but the agreement between the medical home and the patient could include the patient's informed consent for the release of such information to the medical home.

## Fostering Care Delivery Changes

The medical home model can serve as an impetus for increasing primary care physicians' responsibility and authority to coordinate the care of their patients, as well as foster greater patient self-management of medical conditions. Ultimately, piecemeal incentives will likely have limited ability to ensure effective coordination of care across multiple providers that remain unaffiliated and poorly integrated in their management, culture and financing.

Policy makers might consider an improved medical home model as a bridge to broader reforms of the organization of delivery systems, in which they encourage the "virtual" networks defined by service agreements to gradually become actual networks of affiliated providers. Favorable payment systems that focus on provider organizations that *are* integrated can create incentives for medical practices—and health care markets—to evolve toward greater cohesion through enlarging existing practices, mergers among practices or practices and hospital systems, or other creative arrangements. The medical home model is unlikely to result in sustainable, meaningful improvements in care coordination and outcomes without confronting and addressing these underlying issues in the organization of care delivery. ■

## Paying for Medical Homes: A Calculated Risk

By Hoangmai H. Pham, Deborah Peikes  
and Paul B. Ginsburg

*The resurgence in interest among policy makers in the medical home concept stems from goals of improving quality and reducing health care costs. Another driver of recent advocacy for the model is the search for vehicles to increase financial support for primary care physicians, whose services are widely acknowledged to be undercompensated in current fee-for-service payment systems. Moreover, existing fee-for-service payment systems typically do not pay for important activities that primary care physicians perform, such as care coordination and patient education.*

### Partial Capitation Payment Dominates Medical Home Pilots and Demonstrations

Payment approaches for medical homes under current fee-for-service payment systems essentially focus on additional payment for currently uncovered services. But the signal challenge is that payers have limited data both on what these uncovered services are in current practice and what the ideal array of services should be—that is, services that dependably result in high-quality, efficient patient care.

Payers recognize that medical home services, such as care coordination, are difficult to itemize, may occur outside face-to-face patient visits, and can legitimately vary in type and intensity across different patients or over time for a given patient. Paying for medical home services effectively requires some sort of capitation, or fixed per-patient fees. Most payers sponsoring medical home demonstrations or pilots offer additional payment in the form of partial capitation—a single per-patient, per-month or per-practice, per-year fee that is prospectively calculated.

Across public- and private-sector medical home initiatives, it is also clear that payers are more focused on paying for the *processes* that medical homes engage in than on the *outcomes* of those processes. Generally, if medical home initiatives incorporate any variation in payment levels, they tend to link payments to levels of medical-home capability. Frequently they do not consider patients' disease burden or physicians' performance on standardized quality measures. Although a few medical home initiatives—for example, those sponsored by the state of Vermont and the Blue Cross Blue Shield Association—recommend incorporating bonuses tied to physicians' performance on clinical quality or patient satisfaction measures, most payers are taking a wait-and-see approach on bonuses. Even fewer payers are considering payment adjustments

based on patients' illness burden, a posture that makes it difficult to adapt payment levels from one program to another if the programs serve markedly different patient populations—for example, working-age, healthy commercially insured patients vs. sicker Medicare patients. One major exception is the Medicare medical home demonstration (MMHD), which will adjust payment rates based on illness severity.

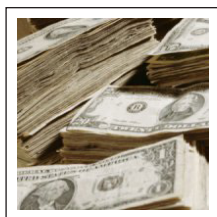
### The Constraint of Budget Neutrality

The most straightforward approach to setting capitated payments would be to first identify the services to be covered—those payers deem effective and currently not reimbursed—and then estimate their unit costs and frequency of delivery to the typical patient. Summing the product of unit costs and service frequency for a given time period would yield a per-capita amount, such as a monthly care management fee. However, calibrating even limited capitated payments proves a thorny endeavor, because payers currently place a high priority on budget neutrality. The hope is that potential savings from delivery of medical home services, such as reduced hospitalizations from improved care coordination, will offset any additional payments to physician practices for serving as medical homes.

But there is so little experience with medical homes that, as yet, there is no certainty that additional services will actually increase efficiency through lower costs and/or improved quality. This uncertainty makes it difficult to set payment levels that will achieve spending neutrality and to determine whether such levels will be sufficient to underwrite the costs of the activities that payers expect medical homes to perform.

Setting payments is particularly challenging in the context of demonstrations and pilots. Physicians naturally are concerned about how they will fare financially in a program of limited duration. They have reason to worry about payers' long-term commitment to pay for medical-home capabilities and the amount of time practices would have to amortize costs incurred to become medical homes. And physicians' perception of the adequacy of payments arguably carries more weight for medical home services than other services, because physicians have to be willing to participate if payers are to establish and sustain this new model.

Lastly, not all patients need the same amount of care coordination and not all medical homes offer the same services—the “typical” unit of medical home care is more difficult to define than that of more discrete services, such as a colonoscopy. For example, one medical home practice might attempt to improve coordination by implementing electronic data exchange with other providers—a resource-intensive strategy—while another practice might opt instead to implement team meetings for particular patients—a



## The resurgence in interest among policy makers in the medical home concept stems from goals of improving quality and reducing health care costs.

far less expensive strategy. Because most medical home initiatives allow physicians to choose different qualifying capabilities, fixed payment levels may not match the actual costs of a particular medical-home capability.

So physicians may expect payments to reflect differences both in disease burden and medical-home capabilities, adding layers of administrative complexity. Unfortunately, the lack of sound cost data to provide different medical home services to different types of patients leaves payers and physicians dependent on educated guesswork for setting cost-based prices.

Given the complexity of setting medical home payment levels, it is no wonder that payment levels range as broadly as they do across different programs—from an expected \$20,000 to \$30,000 per practice, per year in Vermont to \$35,000 to \$85,000 per full-time physician per year in Philadelphia. Fees in the Medicare demonstration could total \$104,232 or \$133,386 per year for the typical primary care physician.<sup>56</sup>

### Calibrating Payments

Payers can employ three general methods to set the capitation payment. First, payment can reflect the costs of providing the extra services expected of a medical home, which requires estimating the costs of acquiring and maintaining medical-home capabilities, such as disease management and “open-access” scheduling. Second, payers can set payments to be budget neutral. Payers would estimate the total they expect to spend for eligible patients, make assumptions regarding the savings that medical home services might generate through more efficient delivery of care and set fees to equal those theoretical savings. Finally, payers can set payments to represent a target share of physician income to ensure adequate participation, which in turn requires estimating a physician’s current revenues and determining the percentage upon

which to base the new fees. Payers can improvise hybrid approaches that try to balance all three objectives of accurately reflecting costs, budget neutrality and adequate physician participation.

In most currently planned public- and private-sector initiatives, the overriding priority is achieving budget neutrality for payers. For example, this is an explicit consideration in the multi-payer medical home pilot in Rhode Island. Payers base payment levels on estimates of the savings they might achieve—for example, from reduced use of emergency department services and redundant testing. Payers would expect these savings to be offset by increases in other spending categories, such as preventive care. At the extreme, one private initiative has cautiously adopted a “pay-as-you-go” approach, by promising to share actual savings with physicians.

Payers are not yet at the point where they are willing to *add* payment for currently nonreimbursed services without a reasonable chance that it will be offset by savings elsewhere. Yet, in the setting of pilots and demonstrations, payers are much better positioned than physicians to take risks and absorb potential losses from the experiment. They could do so by reducing their focus on budget neutrality and relying more heavily on cost estimates of services and/or the level of incentive that will entice physicians to participate.

The Medicare medical home demonstration will actually attempt to price medical home services and reimburse physicians based on costs, as estimated by the Relative Value Update Committee (RUC). In contrast, few private-sector initiatives are taking this bottom-up approach, which physicians may perceive as more scientifically sound and fair but which requires much more painstaking data collection than private payers have been willing to wait or pay for. One notable exception is the Vermont medical home pilot, which reviewed related public and private programs and consulted with physician organizations, other stakeholders and payment experts to assess costs of typical “transformation of care processes,” such as hiring part-time nurses.

To anticipate how physicians might react to different payment levels, payers have to consider not only the costs of required medical-home capabilities, but also the average proportion of practice revenues that eligible patients represent for a typical physician. Most medical home initiatives involve a single payer, with payments that would, therefore, represent a minority, although possibly a substantial one, of a physician’s revenues. This is true even for the MMHD (Medicare accounts for roughly 30% of a primary care physician’s revenues) and initiatives in communities with highly concentrated private payer markets. The revenue sources for a given practice are important to consider because physicians will judge proposed payment levels based on whether they are high enough to amortize investment costs and cover operating costs of new medical-home capabilities. Most initiatives do not explicitly

cover investment costs, and the size of a physician's patient panel is largely fixed. Therefore, physicians' interest in participating may depend on whether they believe that payments exceed their likely operating costs by a large enough margin to offset their investment costs. Multi-payer initiatives would cover a larger percentage of a physician's patient panel, dangling the promise of greater revenue gains to entice physicians to invest in practice improvements.

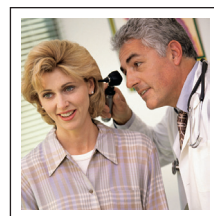
With the many uncertainties in the cost and value of medical home services, there is a golden opportunity for payers and physician organizations to collect detailed information on how physician practices transform themselves to achieve medical-home capabilities and the associated costs of those changes. Such data could not only help inject scientific rigor into the correction of payment levels as programs evolve, but also could clarify the level of effort that patients with different disease burdens require of medical homes, help identify the medical-home capabilities that are most cost effective, and inform judgments about the long-term sustainability of the model.

### Taking Reasonable Risks Ahead of Data

From a broader policy perspective, it is worth questioning whether the earnest efforts to accurately price medical home services are a useful first step to achieving lasting payment reform. If the risk to the primary care infrastructure of doing nothing is as grave as consensus suggests, then payers may need to take a comparable risk to address the problem. At the moment, payers have much greater capacity to assume risk than do physicians—both in terms of resources and their potential to influence the behavior of other providers. Moreover, physicians are far less likely to invest in transforming their practices for pilots of limited duration than for an ongoing program with sustained political support.

Broad and lasting reform involves many technical and political steps pursued over many years. Demonstrations and pilots may merely be the first step in reform. Physicians are trained to order diagnostic tests only when they expect the results to affect future decision making, and not just to gather information for its own sake, because of the inconvenience and potential risk of complications to patients and the expense involved. Similarly, payers might consider whether their commitment to paying for medical home services or increasing their financial support for primary care in other ways will wane if they discover that medical home initiatives do not save money.

If payers are committed to increasing support for primary care regardless of the outcomes of medical home pilots, then they could design payments that at best achieve budget neutrality or even result in spending increases. That is, budget neutrality may be an admirable long-term goal, but an unrealistic expectation at every



The daunting constraints of already soaring health care spending imply that long-term improvements in primary care payment might need to occur in a zero-sum fashion involving shifts of resources from non-primary care services.

step of reform. Payers could implement such payments broadly—for all primary care physicians who achieve medical-home capabilities—rather than just in isolated initiatives. Then they could track physician performance and patient outcomes and adjust the program as needed over time. Precedents for this more aggressive approach include some of the most dramatic changes to Medicare payment policy—establishment of the Medicare inpatient prospective payment system and the resource-based relative value scale for physician services.

### Medical Homes as a Stepping Stone to Broader Payment Reform

In the long term, medical home payment approaches could serve as a model for transitioning payment for care of chronic conditions from fee for service to capitation as much as possible. Coupling capitation with bonuses based on system cost savings and quality outcomes would better align incentives for preventive care, coordination and quality improvement.<sup>57, 58</sup>

The daunting constraints of already soaring health care spending imply that long-term improvements in primary care payment might need to occur in a zero-sum fashion involving shifts of resources from non-primary care services. Payers can influence the degree to which this shift is gradual and acceptable to specialists. Paying for medical home services without immediate expectations of budget neutrality might begin to correct the imperfections of the fee-for-service system in a way that would minimize opposition from non-primary care providers, bettering the chances of broad reform stepping ahead. ■

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# The Medical Home: Growing Evidence to Support a New Approach to Primary Care

Thomas C. Rosenthal, MD

**Introduction:** A medical home is a patient-centered, multifaceted source of personal primary health care. It is based on a relationship between the patient and physician, formed to improve the patient's health across a continuum of referrals and services. Primary care organizations, including the American Board of Family Medicine, have promoted the concept as an answer to government agencies seeking political solutions that make quality health care affordable and accessible to all Americans.

**Methods:** Standard literature databases, including PubMed, and Internet sites of numerous professional associations, government agencies, business groups, and private health organizations identified over 200 references, reports, and books evaluating the medical home and patient-centered primary care.

**Findings:** Evaluations of several patient-centered medical home models corroborate earlier findings of improved outcomes and satisfaction. The peer-reviewed literature documents improved quality, reduced errors, and increased satisfaction when patients identify with a primary care medical home. Patient autonomy and choice also contributes to satisfaction. Although industry has funded case management models demonstrating value superior to traditional fee-for-service reimbursement adoption of the medical home as a basis for medical care in the United States, delivery will require effort on the part of providers and incentives to support activities outside of the traditional face-to-face office visit.

**Conclusions:** Evidence from multiple settings and several countries supports the ability of medical homes to advance societal health. A combination of fee-for-service, case management fees, and quality outcome incentives effectively drive higher standards in patient experience and outcomes. Community/provider boards may be required to safeguard the public interest. (J Am Board Fam Med 2008;21:427–440.)

*"The better the primary care, the greater the cost savings, the better the health outcomes, and the greater the reduction in health and health care disparities."*<sup>1</sup>

The term "medical home" was first coined by the American Academy of Pediatrics in 1967.<sup>2</sup> The American Academy of Family Physicians embraced the model in its 2004 Future of Family Medicine

project<sup>3</sup> and the American College of Physicians issued a primary care medical home report in 2006.<sup>4</sup> The concept of the medical home has recently received attention as a strategy to improve access to quality health care for more Americans at lower cost.

In the medical home, responsibility for care and care coordination resides with the patient's personal medical provider working with a health care team.<sup>5</sup> Teams form and reform according to patient needs and include specialists, midlevel providers, nurses, social workers, care managers, dietitians, pharmacists, physical and occupational therapists, family, and community.<sup>4</sup> Medical home models vary but their success depends on their ability to focus on the needs of a patient or family one case at a time, recruiting social services, specialty medical services, and patient capabilities to solve problems.<sup>6</sup> In the United States primary care has been viewed largely as a discrete hierarchical

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See Related Commentary on  
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level of care. Recently, however, business organizations taking a systems approach to problem solving typical of industry have endorsed the concept of a personal primary care physician as an efficient strategy for delivering a broad range of services to consumers on an as-needed basis.<sup>7,8</sup> In its most mature form, a medical home may integrate medical and psychosocial services in a model more in concert with documented patient health beliefs.<sup>9–11</sup>

Most developed nations assure patient access to primary care physicians whose payments are, at least in part, based on guidelines and outcomes established by consumer/provider oversight. However, high utilization of technology and procedures in the United States have created the misperception that universal access to health care is too expensive, and some countries struggle to match Americans' access to procedures.<sup>12</sup> Unfortunately, the reliance on high technology and procedures has exposed Americans to adverse events and errors possibly related to overuse.<sup>13,14</sup>

Although many Americans are not certain about what constitutes primary care, they want a primary care physician.<sup>15</sup> They assume quality and appreciate technology but value relationship above all else.<sup>16,17</sup> Racial and ethnic disparities are significantly reduced for families who can identify a primary care provider who facilitates access to a range of health providers.<sup>18</sup> Urban and rural communities that have an adequate supply of primary care practitioners experience lower infant mortality, higher birth weights, and immunization rates at or above national standards despite social disparities.<sup>19–22</sup> This article reviews both the peer-reviewed literature and program evaluations of medical homes to assist primary care providers and health planners in assessing the usefulness of the model in their own communities and practices.

## Methods

The outline and subtitles for this article are from the 2006 Joint Principles of the Patient-Centered Medical Home issued by the American Academy of Family Physicians, the American College of Physicians, and the American Academy of Pediatrics.<sup>4</sup> They have been used to facilitate the application of findings presented in this paper to policy development at the medical office and government levels.

PubMed was searched using “medical home” and “patient-centered care” as search phrases. The

Internet sites of the Commonwealth Fund, the Center for Health Care Strategies, the State of North Carolina, the National Health Service of the United Kingdom, and Web sites were searched. US Family Medicine Department Chairs were surveyed by e-mail in October 2007 to expand the list of medical home evaluation studies. The American Academy of Family Physicians' Graham Center supplied their growing bibliography on the medical home concept. These sources led to secondary searches of cited literature and reports. More than 200 publications and several books were reviewed by the author. Articles were selected for citation if they offered original research, meta-analyses, or evaluation of existing programs. The unique characteristics of programs and variations in methodologies made meta-analysis at this level inappropriate. An annotated bibliography of cited references was circulated to members of the New York State Primary Care Coalition, the New York State Health Department, and members of the Association of Departments of Family Medicine for response and reaction. Some key thought pieces are referenced to assist readers who may use this for policy development.

## Medical Home Principles

Table 1 summarizes several principles of medical homes and the quality of the literature supporting the principle.

### *Personal Physician*

Each patient has an ongoing relationship with a personal physician trained to provide first contact and continuous and comprehensive care.<sup>4</sup>

### *Supporting Literature*

When people become sick, they use stories to describe their experience. Patient-oriented care is bound up in the physician's ability to accurately perceive the essence of a patient's story.<sup>31,32</sup> Perception, or empathy, is enhanced by a doctor-patient relationship which, like any relationship, develops incrementally.<sup>33</sup> Relationships do not replace technical expertise and patients accept that quality specialty care often means being cared for by providers with whom they have a limited relationship.<sup>34</sup>

In primary care, a longitudinal relationship is an important tool to enlighten a personalized applica-

**Table 1. Support for Medical Home Features: Quality of Literature**

Recommendation	Evidence Rating	References	Comments
Patients who have a continuity relationship with a personal care physician have better health process measures and outcomes.	1	23, 34, 41, 47, 52	Continuity is most commonly associated with primary care, but cancer care, dialysis, and diabetes care are examples of specialty continuity.
Multiple visits over time with the same provider create renewed opportunities to build management and teaching strategies tailored to individual progress and receptivity.	2	24, 25, 38, 39, 46, 49, 54, 55	Neither primary care nor specialty care can meet their full potential if provided in a vacuum. All studies are challenged to evaluate any piece of the system in isolation from the context of specialty or other community services.
Minorities become as likely as non-minorities to receive preventive screening and have their chronic conditions well managed in a medical home model.	2	19, 20, 22, 26, 27	Rigorous program evaluations, secondary population analyses, and observational comparison studies show consistent findings.
In primary care, patients present at most visits with multiple problems.	1	06, 64, 65	The use of each office visit to care for multiple problems is a property of primary care.
Specialists generate more diagnostic hypotheses within their domain than outside and assign higher probabilities to diagnoses within that domain.	2	73, 74	The interface between primary care and specialty care needs further research.
The more attributes of the medical home demonstrated by a primary care practice, the more likely patients are to be up to date on screening, immunizations, and health habit counseling, and the less likely they are to use emergency rooms.	2	28, 29, 94, 95, 106, 107, 121	

1 = consistent, good quality evidence; 2 = limited quality, patient-oriented evidence; 3 = consensus, usual practice, expert opinion, or case series.<sup>30</sup>

tion of strategies that will achieve incremental improvements in health sustainable through the ever challenging events of life.<sup>35,36</sup> Specialty care can often be judged by how well something is done to the patient. Primary care is often best judged by how well the patient changes behavior or complies with treatment, activities the patient must do themselves. This difference becomes blurred in areas of chronic kidney disease (nephrologist), cancer care (oncologist), and diabetic management (endocrinologist) because of the long-term management relationship with the patient.

A relationship over time between patient and generalist also modifies resource utilization. A survey of physicians in Colorado by Fryer et al<sup>37</sup> demonstrated that in communities with high numbers of specialists or low numbers of generalists, specialists may spend 27% of patient contact time performing primary care services. Just as with anyone practicing outside of their area of comfort, this inevitability should raise concerns. Chart reviews of over 20,000 outpatient encounters by Greenfield<sup>38</sup>

and 5,000 inpatient encounters by Weingarten<sup>39</sup> demonstrated that specialists practicing outside of their area of expertise order more tests and make more referrals than generalists.

Americans spend less time with a primary care physician than patients in countries with better health outcomes.<sup>40</sup> Yet, community-level studies indicate that availability of primary care lowers mortality.<sup>41</sup> The influence of primary care is second to socioeconomic conditions in lowering the frequency of strokes and cancer deaths.<sup>42–45</sup> In a study of 11 conditions, Starfield et al<sup>46</sup> found that patients had more monitoring of more parameters for all their conditions if they received care within a continuous primary care physician relationship as opposed to disease-specific specialty care.

Quality care is not solely dependent on insurance coverage. An analysis of administrative data in a Midwestern Canadian city with universal coverage documented that patients who had a continuous relationship with a personal care provider were more likely to receive cancer screening, had higher

vaccination rates, and had lower emergency department use.<sup>47</sup> In a critical review of the literature on continuity, Saultz and Lochner<sup>34</sup> analyzed 40 studies tracking 81 care outcomes, 41 of which were significantly improved by continuity. Of the 41 cost variables studied, expenditures were significantly lower for 35. Saultz and Lochner<sup>34</sup> concluded that the published literature could not reveal if patient satisfaction with a provider lead to continuity or if continuity lead to satisfaction, but findings were generally consistent with a positive impact on measured outcomes.

A Norwegian study determined that 4 visits with a provider were necessary for accumulated knowledge to impact use of laboratory tests, expectant management, prescriptions, and referrals.<sup>48</sup> Each visit in a continuous relationship renews an opportunity to build management and teaching strategies tailored to individual progress, receptivity, and capacity for compliance and change across the multiple medical conditions faced by many patients.<sup>48</sup> Gulbrandsen et al's<sup>50</sup> review of visits by 1401 adults attending 89 generalists demonstrated that continuity of care increased the likelihood that the provider was aware of psychosocial problems impacting health. Others<sup>51-53</sup> studied the impact of a primary care "gatekeeping" model's impact on Medicaid health management organization patients in Missouri and showed an increase of visits to primary care and fewer visits to emergency rooms, specialists, and nonphysician providers. Continuity has generally been shown to achieve quality at a lower cost.<sup>54,55</sup> In a qualitative analysis, Bayliss et al<sup>56</sup> concluded that patients with multiple comorbidities experienced barriers to self care, such as medication problems, chronic disease interactions, and adverse social and emotional environments requiring coordination of strategies across the comorbidities. Patients attribute health care errors to the breakdown of the doctor-patient relationship 70% of the time.<sup>57</sup>

### ***Team-directed Medical Practice***

A personal medical provider, usually a physician, leads a team of caregivers who take collective responsibility for ongoing patient care.

### ***Supporting Literature***

Eighty-seven percent of primary care physicians think an interdisciplinary team improves quality of care.<sup>58</sup> Separate studies of primary care offices in

upstate New York and California, identified by their positive community reputation, found that all used a coordinated team model regardless of structure (private practice, community health center, hospital-owned). The practices either directly provided or coordinated a spectrum of services including social/behavioral services, rehabilitation, and coordinated specialty care.<sup>10,59</sup>

A team expands on the inherent limits in a 15-minute office visit during which demands for preventive care, chronic disease management, and new complaints compete.<sup>60</sup> Team care increases the contact points between patient and health care team and decreases the likelihood that acute complaints will distract providers from making appropriate adjustments in the care of chronic conditions.

Comprehensive patient management implies more than office visits. In one model a medical assistant measures vital signs and takes an interim history in the examination room then remains with the patient during the physician encounter and stays behind for a debriefing with the patient after the visit. The same assistant contacts the patient after the visit and before the next visit.<sup>61</sup> Phelan et al<sup>63</sup> found that a interdisciplinary geriatric team model screened for more syndromes and improved care at 12 months, although there was little significant improvement thereafter. Disease-specific team models produce good results for the focal disease but are less successful with comorbidities.<sup>45</sup> Multidisciplinary team care of disabled adults in sheltered housing shifted expenditures from unproductive repeat hospitalizations to personal care and increased outpatient visits.<sup>63</sup>

### ***Whole-Person Orientation***

The personal physician or provider maintains responsibility for providing for all of the patient's health care needs and arranges care with other qualified professionals as needed. This includes care for all stages of life: acute care, chronic care, preventive services, and end-of-life care.<sup>4</sup>

### ***Supporting Literature***

Family physicians manage 3.05 problems per patient encounter. They chart 2.82 problems and bill for 1.97. Ninety percent of patients have at least 2 concerns.<sup>64</sup> Patients over the age of 65 average 3.88 problems per visit and diabetics average 4.6.<sup>65</sup> In a study of 211 patient encounters, Parchman et al<sup>66</sup>

found that the number of complaints raised by patients tended to decrease the likelihood that a diabetic would have an adjustment made to a needed medication. Providers compensated by shortening the time to next visit by an average of 8.6 days.

By way of illustration, headache is often a secondary complaint in primary care. Only 3% of patients seen in a primary care office with a headache will have a computed tomography scan, and of these only 5% will have significant findings.<sup>67</sup> If the history and physical fail to raise suspicion of an intracranial process, headache patients are often treated according to symptoms and encouraged to return if symptoms do not resolve as expected while still receiving care for the primary chronic condition. Tactical options include follow-up contact by a member of the health team or earlier recheck.

The recheck plan for nonurgent conditions is a critical element of primary care. Continuity in the relationship establishes the mutual confidence needed for a watchful waiting or recheck strategy.<sup>68</sup> Whereas an immediate diagnostic work-up may quickly arrive at a specific diagnosis, a measured wait and see approach in the absence of “red flags” often confirms the initial impression. “Wait and see” has become a legitimate focus of research in otitis media and some pain syndromes.<sup>69,70</sup>

### ***Care Is Coordinated and/or Integrated Across All Domains of the Health Care System***

Modern health care presents several effective strategies for any single complaint, creating important options for diagnosis and treatment but also increasing the potential for overuse and confusion.<sup>4</sup>

#### *Supporting Literature*

The integration of primary care as an overarching approach to population health management is perhaps best elucidated by a discussion of care integration in a robust modern health care system. Medical homes should not function as entry-level care providers but rather as strategic access managers.

Back pain is a frequent primary care complaint. Patients with “red flag” orthopedic or neurologic complications need to be identified and urgently referred for specialty care. Most will require supportive care including pain relief, exercise, stretching, and physical therapy. A minority of patients who fail to respond still need help selecting a sur-

geon or a rehabilitation program and need guided readjustment to their workplace.<sup>8</sup> Fears and misunderstandings are the greatest threat to recovery but receiving an magnetic resonance imaging scan early in the course of back pain is more strongly associated with eventual surgery than are clinical findings.<sup>71</sup> The challenge is to meet the patient’s need for management and order additional tests at the precise point in the course of illness to be productive.

The skills associated with specialty care must be learned in centers that see preselected patients with a high likelihood of needing specialty procedures. An intense experience essential for training predisposes toward overestimation of the likelihood of severe or unusual conditions in the general population and contributes to an overuse of diagnostic and therapeutic modalities.<sup>72–74</sup> Care across the continuum is more than access to procedures.

When generalist physicians are less available than specialists, specialists often refer secondary problems to other specialists. For example, after a myocardial infarction a patient may be referred by the cardiologist to an endocrinologist, pulmonologist, and a rheumatologist to manage the patient’s long-standing diabetes, cardiac obstructive pulmonary disorder, and osteoarthritis. Specialists who feel unsupported by primary care services schedule more follow-up appointments, many of which duplicate services provided by the primary care physician.<sup>73,75</sup>

However, even in universal coverage societies like the United Kingdom, patients report greater satisfaction when they are able to access specialty care directly.<sup>76</sup> The lesson here is that medical homes should not become barriers to specialty access. The personal care team should facilitate referral to the most appropriate specialist at the appropriate time, consistent with patient concerns.

There is evidence to suggest that primary care involvement in a referral to another physician may improve quality. Children with tonsillitis who are referred by primary care physicians to surgeons have fewer postoperative complications than do children whose parents bypassed the primary care provider.<sup>77</sup> At Kaiser Permanente, primary care physician-facilitated referrals have lower hospitalization rates than do self referrals.<sup>78</sup> Primary care physicians who care for their hospitalized patients provide care that is as efficient as that provided by hospitalists.<sup>76</sup>

Mental health coordination is no different. Smith et al<sup>80</sup> reviewed the literature on management of patients with unexplained symptoms and psychosocial distress, concluding that 80% of these patients accept management by primary care physicians but only 10% will attend a psychosocial referral. When a referral is made, the primary care physician plays an important role in outcome success.<sup>81</sup> Full integration of primary medical care with mental health care improves outcomes in both arenas.<sup>82–84</sup>

### **Quality and Safety**

Clinical excellence is enhanced by integration of information technology into medical practice and tracking of quality measures.<sup>4</sup>

- *Evidence-based medicine* and clinical decision support tools should be incorporated into practice.

### *Supporting Literature*

One challenge to medical home evaluation will be establishing outcome measures that truly affect patient wellness. Specialists are good at adhering to guidelines within their field of expertise.<sup>85–87</sup> However, Hartz and James<sup>88</sup> reviewed 42 published articles comparing cardiologist to generalist care of myocardial infarctions and found that none of the studies took into account patient preferences, severity of comorbid disease, general health status, or resource availability. Confounding comorbidities, physical or behavioral, frequently exclude patients from the clinical trials that generate disease specific guidelines.<sup>89,90</sup>

Yet when primary care group practices systematically organize themselves to meet guideline standards they achieve equivalent outcomes.<sup>91–93</sup> It is a challenge to primary care that generalists perform better at meeting patient-centered guidelines such as exercise, diet, breastfeeding, smoking cessation, and the use of seat belts and less well at meeting disease-specific guidelines. However, patients who report having a continuous relationship with a personal care provider are very likely to receive evidence-based care.<sup>94,95</sup>

- Physicians will accept *accountability for continuous quality* improvement through voluntary engagement in performance measurement.

### *Supporting Literature*

Public reporting of health care measures encourages physicians to meet benchmarks. The conundrum is that reporting variations does little to *explain* variations.<sup>96</sup> Fifty-five percent of generalists agree that patients should have access to performance data although there is little consensus yet on parameters.<sup>58</sup> Whereas the Healthplan Employer Data Information Set has more than 60 different measures (including immunizations, women's health, maternity care, behavioral health, and asthma), accuracy has been limited because the data are based on billing records. Efforts to collect data directly from the patient's primary care record have been piloted by the Wisconsin Collaboration for Health Care Quality but the lack of standard interoperability of records is challenging.<sup>97</sup>

Because continuity is central to patient satisfaction with, and the function of, a medical home, quality should be trended over time and include aspects of care that reflects functions of the whole team.<sup>98</sup> One model incorporates all office personnel (assistants, nurses, and providers) in interviews that identify perceived challenges to quality. Together the office staff and physicians rank priorities, brainstorm solutions, implement action, and monitor results.<sup>99</sup> The science of quality measurement in primary care is evolving and more research is needed. However, waiting for perfect measures should not delay implementation of good measures.

- *Patients actively participate* in decision making, including seeking feedback to ensure that patients' expectations are being met.

### *Supporting Literature*

Only 36% of generalists and 20% of specialists survey their patients.<sup>58</sup> A recent survey of all primary care and ambulatory specialty physicians in Florida showed only modest advances in the adoption of e-mail communication, and little adherence to recognized guidelines for e-mail correspondence.<sup>100</sup> A study of 200 patients with rheumatoid arthritis who initiated their own follow-up found patients were significantly more confident and satisfied with their care and used fewer specialty services, including fewer hospitalizations, and saw their primary care physician as frequently as a matched control group for whom specialty care was more limited.<sup>76</sup> These findings again suggest that

the primary care physician's role as a gate opener and advisor may be more efficient than as a gatekeeper. Such a role requires effective communication.

- *Information technology* has potential to support optimal patient care, performance measurement, patient education, and communication.

### *Supporting Literature*

Primary care is at a tipping point for implementation of electronic medical records. Twenty-three percent of practices currently use electronic medical records; another 23% would like to implement electronic records within the next year.<sup>58</sup> Electronic records have not yet automated collection of consultant reports and test results for patient visits. Eventually a system of health information management will network electronic records in offices, hospitals, and ancillary care centers within a well-protected national grid capable of managing huge amounts of data.<sup>101</sup>

A qualitative study of family medicine practices suggests that approximately a year after implementation, practices with electronic records initiate but struggle with effective tracking of clinical outcomes data.<sup>102</sup> At 5 years, practices with electronic records document more frequent testing of glycosylated hemoglobins and lipid levels but do not achieve better control.<sup>103</sup> High quality primary care groups find having an electronic medical record a useful tool but not essential to meeting guidelines.<sup>104</sup>

- Practices go through a *voluntary recognition* process by an appropriate nongovernmental entity to demonstrate that they have the capabilities to provide patient centered services consistent with the medical home model.

Successful implementation of the medical home model will necessitate recruitment of early adopting, high-performing practices that wish to be measured against benchmarks. During this period measures that lead to improved patient management can be identified and actual costs of care and savings demonstrated. Realistically, it will take years to roll out an evolution in health care of this magnitude and early innovators may be more highly motivated and successful than later implementers.<sup>105</sup>

- *Enhanced access* to care through systems such as open scheduling, expanded hours, and new options for communication between patients, their personal physician, and office staff.

Medical homes should be challenged to assure that patients have access to the right care at the right time in the right place, including the right specialty care. Many of these strategies are focused on viewing services from the patient's perspective, including extended hours and open access.<sup>106–108</sup>

E-mail or Internet-based communication promises to increase patient/physician interaction and interfere less with the patient's work schedule. To be embraced in health care, electronic communication will need to be reimbursed. Kaiser Permanente of Colorado is paying 95% of the CPT 99213 office visit fee for virtual office visits.<sup>109</sup> Internet-based portals are also available to provide secure communication.<sup>110</sup>

### **Demonstration Projects**

Reorganization of primary health care in the United States may be reaching its own tipping point. In 2007 the UnitedHealth Group in Florida, CIGNA, Humana, Wellpoint, and Aetna began supporting primary care practices willing to incorporate quality improvement and active patient management in medical home systems.<sup>111</sup> North Carolina's Medicaid managed care program, North Carolina Community Care, offers a per-member/per-month management fee to physician networks that use evidence-based guidelines for at least 3 conditions, track patients, and report on performance.<sup>112</sup> By 2005 primary care practices realized \$11 million in enhanced fees but generated savings of \$231 million.<sup>113</sup> Erie County, NY, implemented a primary care partial capitation program in 1990 for Medicaid/Medicare patients with chronic disabilities, including substance abuse. A per-member/per-month management fee improved quality of care, decreased duplication, lowered hospitalization rates, and improved patient satisfaction while saving \$1 million for every 1000 enrollees.<sup>114</sup> The Veterans Affairs Administration integrated information technology with a primary care-based delivery system for qualified Veterans and improved quality of care. It now costs \$6,000 less per year to care for a veteran over the age of 65 than for a Medicare recipient.<sup>115</sup>

The Netherlands offers physicians incentives for efficiency, outcomes, and quality in a universal coverage model originally proposed for the United States.<sup>116</sup> Everyone must purchase basic community-rated health insurance through private insurers. The plan has improved compensation for primary care services and has improved distribution of services into previously underserved communities.<sup>117,118</sup>

In 2001, the United Kingdom's National Health Service contracted with general practitioners to provide medical home services to patients. By 2005 these contracts had improved quality of care.<sup>119</sup> The rate of improvement further accelerated when financial incentives were added in 2005.<sup>105,120</sup>

### Limitations of This Review

Primary care practices are very complex. Each practice has a philosophy, style, and culture within which physicians and staff deliver patient care.<sup>121</sup> Any review of the medical home should be balanced by a concern that many practices already feel burdened by existing work demands and perceive little capacity to accept new responsibilities in patient care. Measuring outcomes further adds to the workload and may not be successful in unmotivated practices.<sup>122</sup> It is possible that placing additional responsibilities on a primary care visit may actually interfere with secondary detection of conditions such as skin cancers or depression.<sup>123–125</sup>

Finally, there are limitations in the methods used in this review. The quality of each study was subjectively determined and could not be analyzed in the aggregate because most studies and evaluations used different interventions and approaches to data collection. Studies often reflect unique characteristics of providers and patients in incomparable settings. Generalizations are possible only in light of the consistency of the conclusions drawn by a large body of work.

### Reimbursing the Medical Home

Institutionalizing the medical home as the foundational approach to health delivery strategy in the United States will require a reformulation of reimbursement policy. Overall, the average salary of American physicians is 7 times greater than that of the average American worker. Primary care physicians in the United States earn 3 times the average worker's income. In most of the industrialized

world the overall physician-to-average worker income ratio is 3:1.<sup>126</sup> The Centers for Medicare and Medicaid Services' (CMS) Resource-Based Relative Value Scale, designed in 1992 to reduce inequality between fees for primary care and payment for procedures, has failed. As structured, the committee that advises CMS has 30 members, 23 of whom are appointed by medical specialty societies.<sup>127</sup> This group has tended to approve procedural services resulting in increased revenues for procedural specialties.<sup>128</sup> Between 2000 and 2004, primary care income increased 9.9% whereas specialty incomes rose 15.8%.<sup>129</sup> A 2007 effort to increase primary care reimbursement improved payments by 5%, not the 37% projected by Medicare.<sup>130</sup>

Compounding these salary discrepancies, 40% of the primary care work load (arranging referrals, completing forms, communicating with patients, emotional support, and encouragement) is not reimbursed by a face-to-face fee-for-service methodology.<sup>131</sup> A sophisticated payment system would support team care, health information technology, quality improvement, e-mail and telephone consultation, and be adjusted by case mix.<sup>132</sup>

### Where Will the Money Come From?

The need for change in the reimbursement structure has even reached the popular press. Consumer Reports blames reimbursement policies for the overuse of 10 common procedures, concluding that the US payment system discourages counseling, care coordination, and evidence-based assessment.<sup>133</sup> A primary care-based system may cost 30% less<sup>134</sup> because patients experience fewer hospitalizations, less duplication, and more appropriate use of technology.<sup>75,135</sup> Case-adjusted rates of hospitalizations for heart disease and diabetes are 90% higher for cardiologists and 50% higher for endocrinologists than for primary care physicians.<sup>38,136</sup> Even acute illnesses, such as community-acquired pneumonia, cost less for equivalent outcomes when managed by a primary care physician.<sup>137</sup>

Federally funded Community health centers form the largest network of primary care medical homes in the United States. In 2005 the average cost of caring for a patient in a community health center was \$2,569 compared with \$4,379 for the general population.<sup>138</sup>

Variations in expenditures from one community to another also suggest opportunities for reducing

expenditures while preserving quality. New York State and California spend over \$38,000 per Medicare recipient in the last 2 years of life compared with Missouri, New Hampshire, and North Carolina, where expenditures are below \$26,000.<sup>139</sup> If half of the expenditure variation could be captured, there would be adequate resources to provide uninsured Americans with a personal physician in a patient-centered medical home.<sup>134zrefx</sup>

Improved quality will also cut expenditures. An analysis by Bridges to Excellence estimated that maintaining the glycohemoglobin at 7 in a diabetic patient saves \$279 a year in health costs per patient. Keeping a diabetic's low-density lipoprotein below 100 saves \$369 per year, and keeping the blood pressure below 130/80 saves \$494. Keeping all measures at target saves \$1,059 per patient per year.<sup>140</sup>

### **Reimbursement Models**

Medical practices are business entities. Rewards for change must exceed the cost of change.<sup>141,142</sup> A 3-component fee schedule considered by the American Academy of Family Physicians, the American Academy of Pediatrics, and the American College of Physicians would consist of (1) a fee for service (per visit); (2) a monthly management fee for practices contracting to provide medical home services; and (3) an additional bonus for reporting on quality performance goals.<sup>143,144</sup>

Maintaining *fee-for-service* reimbursement supports provision of essential face-to-face services. However fee-for-service reimbursement should be broadened to embrace e-mail or Web-based virtual office visits, perhaps pegging them to some proportion of a routine office visit.<sup>109</sup>

A *per-member/per-month management fee* for Medicaid patients with or without chronic disease was enough to trigger case management and quality reporting in the North Carolina Medicaid program.<sup>112</sup> In one upstate New York county the enhanced management fee for patients with both mental and physical health problems approximates \$10 per member/per month.<sup>114</sup> Other models have paid fractional fees for specific activities such as chronic disease registries, guideline implementation, and outcomes tracking. A capitation of \$5.50 per member/per month (\$66 per year) is roughly half of the \$110 per year savings projected by the Bridges to Excellence project for well persons enrolled in a medical home.<sup>140</sup> The fee would be

expected to support physician management time, outcomes reporting, electronic record maintenance cost, and a full-time professionally trained case manager. Enhanced services include patient education, telephonic case management, and improved patient access.

The *quality incentive* is a pay-for-performance fee that recognizes achievement of standards of care. HMOs have traditionally relied on claims data for tracking billed procedures. The patient record is more accurate but will require new resources to harvest.<sup>145</sup> When paid at 3-month intervals, quality incentives are frequent enough to trigger continuous improvement efforts but spaced sufficiently to reflect impact of changes. Observation studies have confirmed that practices add staff, install electronic records, and network with community agencies to be eligible for incentives.<sup>105,144</sup> To be effective, criteria must be measurable, based on evidence, and amenable to medical management. Both the measures and incentives must be chosen and incentivized with care to assure providers do not simply deselect complex patients, for it is the complex patients who have the most to gain in a medical home environment.<sup>146</sup> Eventually, public reporting of physician data will facilitate greater patient participation and trust.<sup>147</sup> Studies for as long as 6 years show that appropriately selected incentives can maintain physician satisfaction, patient satisfaction, and long-term performance.<sup>148</sup> Incentives also reinforce the office team structure.<sup>149</sup>

*Oversight* is essential to the ultimate success of a patient centered medical home system of care. The United Kingdom established the National Institute for Health and Clinical Excellence to manage incentives and define objectives of their health system. Using full-time investigators, National Institute for Health and Clinical Excellence publishes and updates clinical appraisals on efficacy. Oversight of National Institute for Health and Clinical Excellence is provided by a board of health professionals, patients, and employers.<sup>150</sup>

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